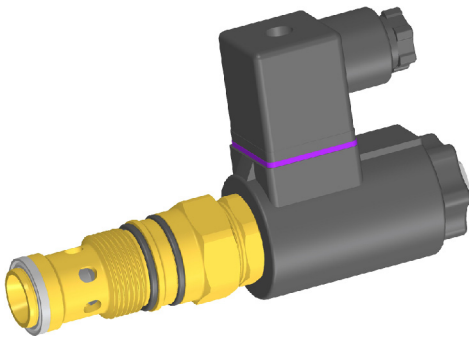


# 2/2 Solenoid Cartridge Valve, Size 10

$Q_{max} = 140 \text{ l/min}$ ,  $p_{max} = 350 \text{ bar}$   
**Bidirectional Seat-Valve Shut-Off, Two-Stage**  
**Series WS22GND..., WS22OND...**



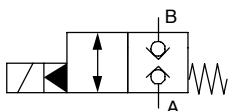
- With bidirectional seat-valve shut-off
- No external pilot drain required
- High flow rates
- All external parts zinc plated, chromited (CrVI-free)
- High pressure wet-armature solenoids
- The slip-on coil can be rotated, and it can be replaced without opening the hydraulic envelope
- Various plug connections and voltages are available
- Can be fitted in a line-mounting body
- Can be fitted in sandwich bodies

## 1 Description

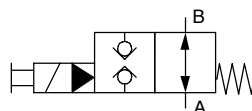
These 2/2 solenoid-operated directional valves are size 10, high performance screw-in cartridges with an M24x1.5 mounting thread. The main and pilot stages are both designed on the poppet/seat principle, and they are therefore virtually leak-free in both directions of flow (bidirectional seat-valve shut-off). These screw-in cartridges are predominantly used in certain mobile and industrial applications where leak-tight shut-off functions are crucially important. Examples are where loads, tensions, or clamping

forces must be held without leakage. All external parts of the cartridge are zinc plated and chromited (CrVI-free) and are thus suitable for use in the harshest operating environments. The slip-on coils can be replaced without opening the hydraulic envelope and can be positioned at any angle through 360°. If you intend to manufacture your own cavities or are designing a line-mounting installation, please refer to the section "Related data sheets".

## 2 Symbol



WS22GND...-10...



WS22OND...-10...

## 3 Technical data

General characteristics	Description, value, unit
Designation	2/2 solenoid cartridge valve
Design	bidirectional seat-valve shut-off, two-stage
Mounting method	screw-in cartridge M24 x 1.5
Tightening torque	50 ± 2.5 Nm
Size	nominal size 10, cavity type DD or cavity type DC (option with adapter ring C)
Weight	0.52 kg
Mounting attitude	unrestricted
Ambient temperature range	-25 °C ... +50 °C

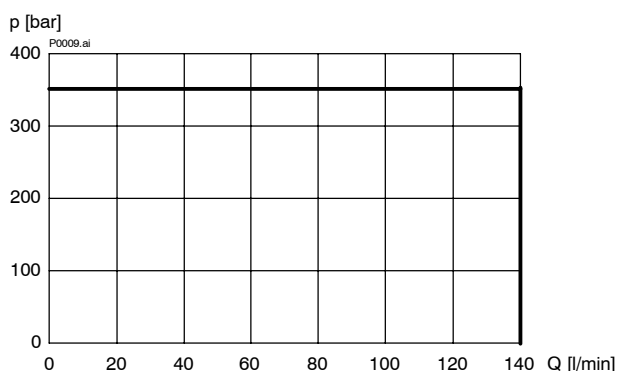
Hydraulic characteristics	Description, value, unit
Maximum operating pressure	350 bar
Maximum flow rate	140 l/min
Flow direction	A → B / B → A, see symbols
Hydraulic fluid	HL and HLP mineral oil to DIN 51 524; for other fluids, please consult BUCHER
Hydraulic fluid temperature range	-25 °C ... +80 °C
Viscosity range	10...500 mm <sup>2</sup> /s (cSt), recommended 15...250 mm <sup>2</sup> /s (cSt)
Minimum fluid cleanliness Cleanliness class to ISO 4406 : 1999	class 20/18/15

Electrical characteristics	Description, value, unit
Supply voltage	12 V DC, 24 V DC 115 V AC, 230 V AC (50 ... 60 Hz)
Supply voltage tolerance	± 10 %
Nominal power consumption	V DC = 27 W V AC = 25 W
Relative duty cycle	100 %
Protection class to EN 60 529	IP 65 / IP 67, see "Ordering code" (when connector plugs are properly fitted)
Electrical connection	3-pin square plug to DIN EN 175301-803 (standard) for other connectors, see "Ordering code"

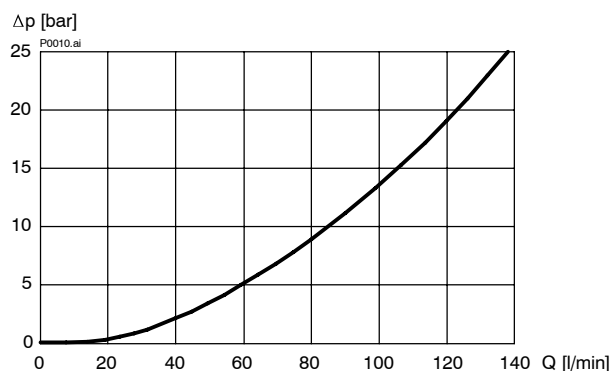
## 4 Performance graphs

measured with oil viscosity 33 mm<sup>2</sup>/s (cSt), coil at steady-state temperature and 10 % undervoltage

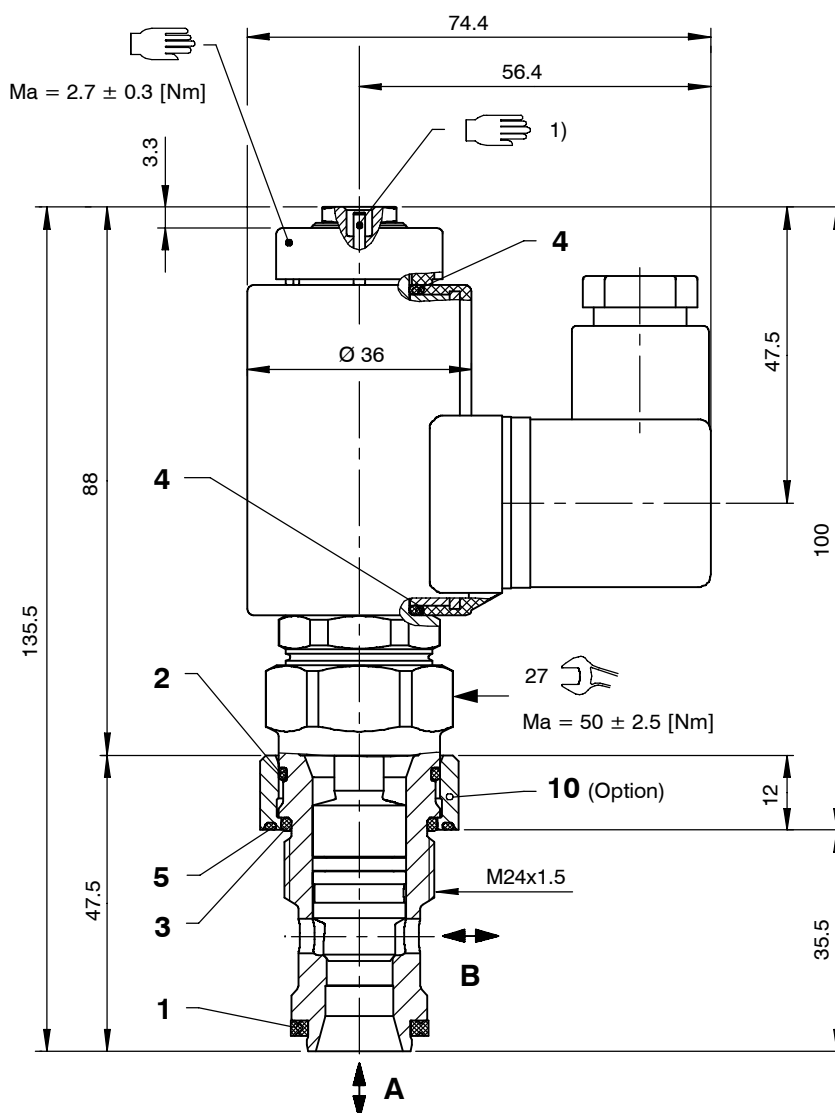
$p = f(Q)$  Performance limits



$\Delta p = f(Q)$  Pressure drop - Flow rate characteristic



## 5 Dimensions & sectional view



### Important:

- 1) WS22GN... **without** manual override  
WS22ON... **with** manual override

## 6 Installation information



### Important

When fitting the cartridges, use the specified tightening torque. No adjustments are necessary, since the cartridges are set in the factory.



### Attention

Only qualified personnel with mechanical skills may carry out any maintenance work. Generally, the only work that should ever be undertaken is to check, and possibly replace, the seals. When changing seals, oil or grease the new seals thoroughly before fitting them.

### Seal kit no. DS-281-N

Item	Qty.	Description
1	1	O-ring Ø 22.10 / 16.50 x 2.50
2	1	O-ring no. 020 Ø 21.95 x 1.78 N90
3	1	O-ring Ø 21.00 x 2.00 N75
4	2	O-ring Ø 16.00 x 2.00 Viton
5	1	Backup ring Ø 27.00 x 1.50 N75

### Option with adapter ring C

Item	Qty.	Description
10	1	Adapter ring C Ø 32.00 x 12.00

## 7 Ordering code

Ex.	W	S	22G	N	D	B	-	10	-	1	24 VDC	-	-
W	=	directional valve											
S	=	seat-valve design (bidirectional shut-off)											
22G	=	2/2 function, normally closed											
22O	=	2/2 function, normally open											
N	=	solenoid operated, V DC = 27 W / V AC = 25 W											
D	=	cavity type DD ( <b>standard</b> )											
C	=	cavity type DC (option with adapter ring C)											
A ... Q	=	standard model - see relevant data sheets											
Z ... R	=	special features - please consult BUCHER											
10	=	nominal size 10											
(blank)	=	Nitrile seals ( <b>standard</b> )											
V	=	Viton seals (special seals - please consult BUCHER)											
1 ... 9	=	design number (omit when ordering new units)											
...	=	voltage and current plainly specified											
(blank)	=	with mating plug to DIN EN 175301-803 ( <b>standard, IP 65</b> )											
M100	=	without mating DIN EN plug											
C	=	Kostal plug connection (IP 65)											
JT	=	Junior Timer radial plug connection (with quenching diode, IP65)											
IT	=	Junior Timer axial plug connection (with quenching diode, IP65)											
D	=	Deutsch plug connection DT04-2P (IP 67)											
DT	=	Deutsch plug connection DT04-2P (with quenching diode, IP 67)											
F	=	flying leads (500 mm)											
													} mating plug not supplied (optional connector styles)

## 8 Related data sheets

Reference	(Old no.)	Description
400-P-040011	(i-32)	The form-tool hire programme
400-P-060121	(i-45.2)	Cavity type DD
400-P-060111	(i-45.1)	Cavity type DC (option with adapter ring C)
400-P-120110	(W-2.141)	Coils for screw-in cartridge valves
400-P-740111	(G-24.21)	Line- and manifold-mounting body, type DD-12 (G 1/2")
400-P-740101	(G-24.20)	Line- and manifold-mounting body, type DC-12 (G 1/2")

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